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Appeal Brief
5/2003
P-3611-2-D1-3-C1

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of R. Dennis Nesbitt et al.

Serial No.: 09/917,539

Examiner: T. Duong

Filing Date: July 27, 2001

Group Art Unit: 3711

For: LOW SPIN GOLF BALL COMPRISING A METAL, CERAMIC OR
COMPOSITE MANTLE OR INNER LAYER

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APPEAL BRIEF UNDER 37 C.F.R. § 1.192

This Appeal Brief is in furtherance of the Notice of Appeal that was filed for the above-referenced application on August 14, 2003. Appellant hereby petitions for an additional one (1) month extension of time under 37 C.F.R. § 1.136, thereby extending the period for response to November 14, 2003.

The fees required under § 1.17, and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying Fee Transmittal.

Appellant files herewith an Appeal Brief in connection with the above-identified application, wherein claims 1 to 30 were finally rejected in the Office Action of April 14, 2003. What follows is Appellant's Appeal Brief in accordance with 37 C.F.R. § 1.192(a).

CERTIFICATION UNDER 37 C.F.R. 1.8

I hereby certify that this Appeal Brief and the documents referred to as attached therein are being transmitted by facsimile on this date November 7, 2003, to TC3700 at 703-872-9303 addressed to: Mail Stop: BPAI, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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I. REAL PARTY IN INTEREST (37 C.F.R. § 1.192(c)(1))

The real parties in interest in this appeal are the inventors named in the caption of this brief (R. Dennis Nesbitt et al.) and the assignee, Callaway Golf Company.

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. § 1.192(c)(2))

Currently, it is believed that there are no other appeals or interferences in process or pending before the U.S. Patent and Trademark Office from which the present application bases its priority, or any case which bases its priority upon the present application, that will directly affect or be affected by or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS (37 C.F.R. § 1.192(c)(3))

The status of claims set forth after the Final Office Action mailed April 14, 2003 and the Advisory Actions mailed June 20, 2003, July 14, 2003 and July 31, 2003 was, and is, as follows:

Allowed claims: none

Rejected claims: 1 to 30

The present appeal is directed specifically to claims 1 to 30.

IV. STATUS OF AMENDMENTS (37 C.F.R. § 1.192(c)(4))

In the Final Office Action of April 14, 2003, the Examiner rejected claims 1 to 6 and 8 to 18 under 35 U.S.C. 103(a) as being unpatentable over Sullivan et al. (US 5,820,489) in view of Cavallaro (US 5,688,191), Cavallaro (US 5,810,678) and Harris et al. (US 5,856,388); and claims 7 and 19 to 30 under 35 U.S.C. 103(a) as being unpatentable over Sullivan et al. (US 5,820,489) in view of Cavallaro (US 5,688,191), Cavallaro (US 5,810,678) and Harris et al. (US 5,856,388) as applied in claim 1, and further in view of Shama (US 4,848,770), Schenk (US 4,085,937) and Boehm et al. (US 5,683,312).

There are no unentered amendments.

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V. SUMMARY OF THE INVENTION (37 C.F.R. § 1.192(c)(5))

The present invention is directed to a low spin golf ball comprising: a core including a core component and a spherical mantle encompassing said core component, said mantle comprising (i) a polymeric material, and (ii) a reinforcing material dispersed throughout said polymeric material, said core having a Riehle compression of at least about 75; and a polymeric outer cover disposed about said core, said polymeric cover comprising a material selected from the group consisting of a high acid ionomer, a low acid ionomer, an ionomer blend, a non-ionomeric elastomer, a thermoset material, and combinations thereof, said polymeric cover having a Shore D hardness of at least about 65.

VI. ISSUES (37 C.F.R. § 1.192(c)(6))

Whether claims 1 to 6 and 8 to 18 are obvious under 35 U.S.C. 103(a) over Sullivan et al. (US 5,820,489) in view of Cavallaro (US 5,688,191), Cavallaro (US 5,810,678) and Harris et al. (US 5,856,388); and whether claims 7 and 19 to 30 are obvious under 35 U.S.C. 103(a) over Sullivan et al. (US 5,820,489) in view of Cavallaro (US 5,688,191), Cavallaro (US 5,810,678) and Harris et al. (US 5,856,388) as applied in claim 1, and further in view of Shama (US 4,848,770), Schenk (US 4,085,937) and Boehm et al. (US 5,683,312).

VII. GROUPING OF CLAIMS (37 C.F.R. § 1.192(c)(7))

Claims 1 to 30 are pending, and are grouped as follows:

Claim 1 claims a low spin golf ball comprising: a core including a core component and a spherical mantle encompassing said core component, said mantle comprising (i) a polymeric material, and (ii) a reinforcing material dispersed throughout said polymeric material, said core having a Riehle compression of at least about 75; and a polymeric outer cover disposed about said core, said polymeric cover comprising a material selected from the group consisting of a high acid ionomer, a low acid ionomer, an ionomer blend, a non-ionomeric elastomer, a thermoset material, and combinations thereof, said

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polymeric cover having a Shore D hardness of at least about 65. Claims 2 to 18 depend from claim 1 and claim additional features. Claims 1 to 18 stand or fall together.

Claim 19 claims a low spin golf ball comprising: a core including a core component and a vitreous mantle enclosing said core component, said core having a Riehle compression of from about 75 to about 115; and a polymeric outer cover disposed about said mantle, said cover having a Shore D hardness of at least about 65. Claims 20 to 26 depend from claim 19 and claim additional features. Claims 19 to 26 stand or fall together.

Claim 27 claims a low spin golf ball comprising: a generally spherical core having an interior core component, and a mantle layer disposed about said core component, said mantle layer including at least one metal, said core exhibiting a Riehle compression of from about 75 to about 115; and a polymeric outer cover disposed about said core, said cover exhibiting a Shore D hardness of at least about 65. Claims 27 to 30 depend from claim 27 and claim additional features. Claims 27 to 30 stand or fall together.

Independent claims 1, 19 and 27 are each separately patentable because each claim claims a different mantle type. Claim 1 claims a polymeric mantle having a reinforcing material dispersed throughout; claim 19 claims a vitreous mantle, and claim 27 claims a mantle including at least one metal.

VIII. ARGUMENTS (37 C.F.R. § 1.192(c)(8))

1. The Examiner's rejection of claims 1 to 6 and 8 to 18 as obvious under 35 U.S.C. 103(a) over Sullivan et al. (US 5,820,489) in view of Cavallaro (US 5,688,191), Cavallaro (US 5,810,678) and Harris et al. (US 5,856,388) is erroneous and must be reversed.

The Examiner has rejected claims 1 to 6 and 8 to 18 as obvious under 35 U.S.C. 103(a) over Sullivan et al. (US 5,820,489) in view of Cavallaro (US 5,688,191), Cavallaro (US 5,810,678) and Harris et al. (US 5,856,388). The basis for the Examiner's rejection is as follows:

Claims 1-6, 8-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan et al. (5,820,489) in view of Cavallaro

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(5,688,191) and Cavallaro (5,810,678) and Harris et al. (5,856,388)). Sullivan discloses a golf ball having a core with a PGA compression of 45-85 or its Riehle compression 115-75 (Col. 5, lines 14-20) and a diameter of 1.54-1.545 inch (Col. 4, lines 54-44), a cover layer containing a high acid ionomer with a Shore D hardness about 65 or greater and cover thickness of 0.08-0.13 inch (Col. 5, lines 22-26 and Abstract), Col. 23, lines 21-22). Sullivan does not disclose a mantle layer but one of ordinary skill in the art recognizes that a golf ball can be fabricated with plurality of layers including a mantle layer which impact playing characteristics. Cavallaro '191 teaches that it is desirable to include a mantle layer which believes to have an effect on the "feel" of the golf ball. (Col. 8, lines 6-24). Cavallaro '678 also makes it clear that conventional two-piece balls provide maximum distance but the two piece balls have a hard "feel" when struck by a club (Col. 1, lines 23-45). Cavallaro '678 further teaches that it is desirable to fabricate a multiplayer golf ball having a soft mantle layer to overcome the conventional two-piece hard "feel" (Col. 4, lines 28-38). In addition, Harris et al. '388 also makes it clear that golf ball manufacturers introduced a multiplayer golf balls with multiple intermediate layers or mantle layers in an effort to overcome the undesirable hard "feel" aspect of two-piece balls. Thus, it would have been obvious in view of Cavallaro '191 and/or Cavallaro '678 and/or Harris '388 to one having ordinary skill in the art at the time of the invention to incorporate a mantle layer as taught by Cavallaro '191 and/or Cavallaro '678 and/or Harris '388 into Sullivan's invention in order to provide a soft "feel" upon impacting a club against the golf ball. Regarding claims 2-6, Cavallaro '191 discloses a mantle layer of thermoset materials (Abstract) with a mantle thickness of 0.025 to 0.125 inch (Col. 7, lines 34-36), and a styrene-butadiene material (Col. 4, lines 27-30), thermoplastic material of polybutylene terephthalate (Col. 4, lines 56-67). Applicant should note that the type of fillers in the mantle layer is a design choice since the selection of fillers is determined by filler cost, specific gravity, and polymer dispersity.

(See Office Action of April 14, 2003 pp. 2-3.)

A. The Examiner's Cited References

U.S. Patent No. 5,820,489 to Sullivan discloses a two piece golf ball comprising a core and a cover, and the cover is preferably a thick cover. Sullivan does not disclose a mantle layer.

U.S. Patent No. 5,688,191 to Cavallaro discloses a multilayer golf ball having a core, a mantle and a cover, wherein the mantle layer has a particular flexural modulus and tensile modulus in order to make it feel

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soft.

U.S. Patent No. 5,810,678 to Cavallaro discloses a multilayer golf ball having a core, at least one cover layer, and one or more mantle layers disposed between the core and cover layer, wherein the core has a compression of less than 70 points and a specific gravity less than 1.18 and the mantle layer has a specific gravity of greater than 1.2.

U.S. Patent No. 5,856,388 to Harris discloses a multilayer golf ball having a cover and a core, and optionally at least one intermediate layer, wherein the cover, the intermediate layer, or both, are formed from an oxa acid compound having a particular formula.

B. The Subject Matter of Claims 1 to 6 and 8 to 18 is Patentably Distinguishable Over the Cited Art

Claims 1 to 6 and 8 to 18 are not obvious in light of the combination of Sullivan, Cavallaro '191, Cavallaro '678 and Harris.

Appellant respectfully disagrees with the Examiner and respectfully submits that the Examiner has failed to make out a *prima facie* case of obviousness. Sullivan discloses a two piece golf ball comprising a core and a cover, and the cover is preferably a thick cover (see column 4, lines 26 to 28, which states that the "cover is preferably sized to be larger than conventional diameters"). As stated by the Examiner, Sullivan does not disclose a mantle layer. Cavallaro '191 discloses a multilayer golf ball having a core, a mantle and a cover, wherein the mantle layer has a particular flexural modulus and tensile modulus in order to make it feel soft.

Appellant respectfully submits that there is no teaching or suggestion in Cavallaro '191 or Sullivan to motivate one skilled in the art to add a mantle to the golf ball of Sullivan. One skilled in the art would not be motivated to add a mantle layer to the golf ball of Sullivan because Sullivan specifically teaches a two piece golf ball having a large core and a larger, thicker cover, and it is the combination of the soft core and

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thicker cover that provides the good feel and lower spin in Sullivan. Appellant respectfully submits that Sullivan teaches away from adding another layer, such as a mantle. By providing a soft core for the soft feel and the thicker cover, the resulting golf ball has good feel and reduced spin. Appellant respectfully submits that one skilled in the art would not be motivated by Cavallaro '191 to add a mantle, specifically the mantle of Cavallaro '191, to Sullivan because the addition of the mantle of Cavallaro '191 increases the spin rate (see Tables II and III, where the spin rate of the golf balls of the invention is higher than that of commercial balls). The focus of Sullivan is to decrease the spin rate, and Sullivan's combination of core and cover does this, as shown in Table III.

Even if there was some teaching or suggestion to combine Sullivan and Cavallaro '191, which, as discussed above, Appellant submits there is not, Cavallaro '191 does not disclose a mantle comprising a polymeric material having a reinforcing material dispersed throughout the polymeric material. Therefore, the addition of Cavallaro '191 does not cure the fundamental deficiency of Sullivan, that is, Sullivan does not disclose a mantle, or a mantle comprising a polymeric material having a reinforcing material dispersed throughout the polymeric material. The addition of Cavallaro '191 would only provide a mantle layer, but not a mantle layer with a reinforcing material. Furthermore, neither Sullivan nor Cavallaro '191, either alone or in combination, disclose a core having a core component and a mantle layer wherein the combined core component and mantle layer has a Riehle compression of at least 75. The core of Sullivan, which does not comprise a core component and a mantle layer, has a Riehle compression of about 75 to 115, but Sullivan does not disclose a core which includes a core component and a mantle, wherein the core comprising the core component and mantle have a Riehle compression at least about 75. Even if a mantle layer was added to

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Sullivan, the core and mantle layer combination would not necessarily have a Riehle compression of at least 75.

Appellant respectfully submits that the addition of either or both Cavallaro '678 and/or Harris et al. also do not cure the defect in Sullivan because neither Cavallaro '678 nor Harris et al. disclose the mantle layer having the claimed properties. Appellant respectfully submits that even if the type of filler in the mantle is only a design choice as stated by the Examiner, which Appellant respectfully disagrees with, the Examiner has not shown the motivation or suggestion to add the filler or reinforcing material to the mantle, or a specific type of filler or reinforcing material.

In the Advisory Action mailed June 20, 2003, the Examiner stated that "Cavallaro '191 does not show or teach specifically that the addition of a mantle layer "increases" or decreases the spin rate but merely says the mantle layer has the affect on playing characteristics such as spin and etc. Note, Cavallaro '191 shows a spin rates on Table II which are tested with a Driver while the spin rate on Table III of Sullivan '489 are tested with a #9 iron; thus, it is not a proper comparison and drawn conclusion." Appellant respectfully disagrees with the Examiner. The Examiner omits that Cavallaro '191, in Table III, shows the effect of spin with an 8 iron, and the results are the same (that is, spin rate increases for the golf balls of the invention). Additionally, Cavallaro does teach that increased spin rate is preferable. In the Background section, Cavallaro states, when discussing traditional two piece balls, that "due to their hardness, these balls have a relatively low spin rate which makes them difficult to control." Cavallaro states that wound balls are preferred for advanced players because of "superior spin", and they "provide more spin", and the invention will try to make a ball more like a wound ball (i.e., more spin). See column 1, lines 38 to 63. Clearly, contrary to the assertions of the Examiner, Cavallaro is interested in increasing the spin rate of the ball, not decreasing it. Furthermore, although Cavallaro and

Sullivan use different clubs to measure spin rate, Appellant respectfully submits that the comparison is proper and a conclusion can be drawn from the comparison. The absolute numbers may not necessarily be compared, but the direction or effect of spin rate (or increase/decrease) can be compared, particularly between an 8 iron and a 9 iron, which are similar clubs.

In the Advisory Action mailed July 14, 2003, the Examiner stated that “[w]ith respect to the comparison of an 8-iron and a 9 iron, using the same ball, one skilled in the art would recognize that a 9-iron has a higher loft angle would produce a higher spin rate than an 8-iron. Note, in order to properly compare the spin rate, the test must be conduct with the same iron #, speed of the club head, launched angle of the ball, and initial ball velocity. Again, Appellant respectfully disagrees. As previously stated, Appellant is merely pointing out that Cavallaro is interested in increasing the spin rate, and his tests show that adding the mantle layer increases the spin, while Sullivan is interested in decreasing the spin rate. The choice of club is irrelevant as the trend or direction (increasing or decreasing) will be the same regardless of which club is used. Applicants are not comparing the absolute spin numbers of the balls of Sullivan and Cavallaro, only the spin rate trend (i.e., whether it increases with the balls of the invention, or whether it decreases), therefore, the fact that different irons are used does not matter.

As previously stated, Appellant respectfully submits that there is no teaching or suggestion in Cavallaro '191 or Sullivan to motivate one skilled in the art to add a mantle to the golf ball of Sullivan. One skilled in the art would not be motivated to add a mantle layer to the golf ball of Sullivan because Sullivan specifically teaches a two piece golf ball having a large core and a larger, thicker cover, and it is the combination of the soft core and thicker cover that provides the good feel and lower spin in Sullivan. Appellant respectfully submits that Sullivan teaches away from

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adding another layer by providing a soft core for the soft feel and the thicker cover, and a resulting golf ball having good feel and reduced spin. Appellant respectfully submits that one skilled in the art would not be motivated by Cavallaro '191 to add a mantle, specifically the mantle of Cavallaro '191, to Sullivan because the addition of the mantle of Cavallaro '191 increases the spin rate, and the focus of Sullivan is to decrease the spin rate, and Sullivan's combination of core and cover does this.

Claims 2 to 6 and 8 to 18 depend, or ultimately depend, from claim 1, which Appellant submits is not obvious over Sullivan in view of Cavallaro '191, Cavallaro '678 and Harris et al. for the reasons just discussed, therefore, claims 2 to 6 and 8 to 18 are also not obvious over Sullivan in view of Cavallaro '191, Cavallaro '678 and Harris et al.

The Examiner's cited references neither teach nor suggest the golf ball of claims 1 to 6 and 8 to 18.

2. The Examiner's rejection of claims 7 and 19 to 30 as obvious under 35 U.S.C. § 103(a) over Sullivan et al. (US 5,820,489) in view of Cavallaro (US 5,688,191), Cavallaro (US 5,810,678) and Harris et al. (US 5,856,388) as applied in claim 1, and further in view of Shama (US 4,848,770), Schenk (US 4,085,937) and Boehm et al. (US 5,683,312) is erroneous and must be reversed.

The Examiner has rejected claims 7 and 19 to 30 as obvious under 35 U.S.C. § 103(a) over Sullivan et al. (US 5,820,489) in view of Cavallaro (US 5,688,191), Cavallaro (US 5,810,678) and Harris et al. (US 5,856,388) as applied in claim 1, and further in view of Shama (US 4,848,770), Schenk (US 4,085,937) and Boehm et al. (US 5,683,312).

The basis for the Examiner's rejection is as follows:

Claims 7 and 19-30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over prior art as applied in claim 1, above and further in view of Shama (4,848,770) and Schenk (4,085,937) and Boehm et al. (5,683,312). With respect to claims 7, 19-22, and 28-29, Sullivan and

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Cavallaro disclose the claimed invention except a vitreous or glassy mantle layer or ceramic layer but Sullivan does disclose the use of fillers such as limestone and silica in the core formulation (Col. 9, lines 19-22) and limestone is an inexpensive filler. Shama 770' teaches that a mantle layer contains a filler (Col. 3, lines 1-6 and Col. 3, lines 25-26) to control the weight of the finished golf ball, provide the compression, and cut resistance of the golf ball. In addition, it is also known in the art that filler also provide reinforcement of the golf ball. Schenk 937' also teaches the use of filler such as precipitated silica in the formulation to reinforce the structure of the golf ball. Schenk also teaches use of glass microspheres in the formulation to provide cut resistance and control the weight of the golf ball (Col. 5, lines 57-67). Thus, it would have been obvious in view of Sharma and Schenk to one having ordinary skill in the art to incorporate the filler of Sharma with specific filler types of silica and glass microspheres of Schenk to control the weight, improve compression, and cut resistance as taught by Sharma and Schenk. Claims 23, 24 and 25-27 recite limitations similar to claims 10, 1, and 16-18, above. Thus, claims 23, 24, and 25-27 are rejected for the same reasons as applied to claims 10, 1, and 16-18, above. With respect to claim 28, the prior art disclose the claimed invention except the use of metal filler in the mantle layer; however, Boehm teaches the use of aluminum (Col. 4, lines 27-30). Thus, it would have been obvious in view of Sharma, Schenk, and Boehm to incorporate a metal filler as taught by Boehm in Sullivan and Cavallaro golf ball to control weight and provide reinforcement for the golf ball. With respect claim 29, each metal has its own specific gravity, and the selection of metal and/or alloy and its amount in the formulation must result in a finished golf ball that complies with USGA weight limits. Claim 30 recites limitations similar to claim 14; thus, claim 30 is rejected for the same reasons as applied in claim 14, above.

(See Office Action of April 14, 2003 pp. 3-4.)

A. The Examiner's Cited References

U.S. Patent No. 5,820,489 to Sullivan discloses a two piece golf ball comprising a core and a cover, and the cover is preferably a thick cover. Sullivan does not disclose a mantle layer.

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U.S. Patent No. 5,688,191 to Cavallaro discloses a multilayer golf ball having a core, a mantle and a cover, wherein the mantle layer has a particular flexural modulus and tensile modulus in order to make it feel soft.

U.S. Patent No. 5,810,678 to Cavallaro discloses a multilayer golf ball having a core, at least one cover layer, and one or more mantle layers disposed between the core and cover layer, wherein the core has a compression of less than 70 points and a specific gravity less than 1.18 and the mantle layer has a specific gravity of greater than 1.2.

U.S. Patent No. 5,856,388 to Harris discloses a multilayer golf ball having a cover and a core, and optionally at least one intermediate layer, wherein the cover, the intermediate layer, or both, are formed from an oxa acid compound having a particular formula.

U.S. Patent No. 4,848,770 to Shama discloses a three piece non-wound golf ball having improved performance characteristics comprising a center, mantle and cover, wherein said center comprises 90-100 parts by weight cis-1,4 polybutadiene, 20-35 parts by weight cross-linking agent, and 10-30 parts by weight filler; said mantle comprises from 90-100 parts by weight cis-1,4 polybutadiene, 0-10 parts by weight natural rubber, 35-40 parts by weight cross-linking agent and 1-4 parts by weight filler said ball having the certain physical specifications.

U.S. Patent No. 4,085,937 to Schenk discloses a polymeric composition suitable for molding floater golf balls comprising a peroxide-coagent vulcanizate having dispersed therein from about 5% to about 10% by weight of the composition of hollow glass microspheres wherein at least 90% by volume of said microspheres have specific properties, and wherein said polymeric composition has a specific gravity of less than 0.98.

U.S. Patent No. 5,683,312 Boehm et al. discloses a golf ball having a diameter and being comprised of a core and a cover, wherein the

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core is further comprised of a fluid mass at the center of the ball, a first mantle layer surrounding the fluid mass and a second, solid, non-wound mantle layer surrounding and abutting the first mantle layer, wherein the first mantle layer has an inner diameter of 30 to 70% of the ball diameter and is a polymer material selected from the group of thermoset rubber, plastic, and thermoplastic elastomeric material and the second mantle layer has an outer diameter of 80 to 98% of the ball diameter and the second mantle layer is a polymer material selected from the group of thermoset rubber materials and thermoplastic elastomeric materials.

B. The Subject Matter of Claims 7 and 19 to 30 is Patentably Distinguishable Over the Cited Art

Claims 7 and 19 to 30 are not obvious in light of the combination of Sullivan in view of Cavallaro '191, Cavallaro '678 and Harris, and further in view of Shama, Schenk and Boehm.

Appellant respectfully submits that the Examiner has failed to make out a *prima facie* case of obviousness. As discussed above, Sullivan discloses a two piece golf ball comprising a core and a cover, and the cover is preferably a thick cover. As stated by the Examiner, Sullivan does not disclose a mantle layer. Cavallaro '191 discloses a multilayer golf ball having a core, a mantle and a cover, but Cavallaro '191 does not disclose a mantle layer comprising a polymeric material with a reinforcing material dispersed in the polymeric material.

As previously discussed, there is no motivation, suggestion or teaching to combine Sullivan and Cavallaro '191 and to add the mantle layer of Cavallaro '191 to the golf ball of Sullivan because the mantle layer of Cavallaro '191 increases the spin, and the focus of Sullivan is to decrease the spin with the core and cover combination. Even if the mantle of Cavallaro '191 was added to the golf ball of Sullivan, Appellant's golf ball having a mantle layer comprising a polymeric material with a reinforcing material dispersed in the polymeric material

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would not be disclosed, wherein the combination of the core and mantle have a Riehle compression of at least 75.

Since there is no motivation, suggestion or teaching to combine Cavallaro '191 with Sullivan, the addition of additional references, such as Shama, Schenk and/or Boehm does not remedy this defect. Sullivan, as previously stated, is a two piece ball with specific core and cover features. There is no motivation at all to add a mantle to the golf ball of Sullivan to produce a golf ball having a core including a core component and a vitreous mantle (claim 19) or a core having an interior core component and a mantle layer including at least one metal (claim 28).

As stated by the Examiner, Sullivan discloses fillers in the core, not in a mantle layer. Appellant respectfully submits that the Examiner has mischaracterized the teachings of Sullivan because although Sullivan does disclose the use of fillers in a core, Sullivan does not disclose the use of fillers of any type in a mantle since Sullivan does not even disclose a mantle layer at al.

Claim 7 depends from claim 1, which, as discussed above, Appellant respectfully submits is not obvious over Sullivan in view of Cavallaro '191, therefore claim 7 is also not obvious over Sullivan in view of Cavallaro '191. Claims 20 to 27 and 29 to 30 depend, or ultimately depend, from claims 19 and 28 respectively, which Appellant submits are not obvious over Sullivan in view of Cavallaro '191, Cavallaro '678 and Harris et al., further in view of Shama, Schenk and Boehm, for the reasons just discussed, therefore, claims 20 to 27 and 29 to 30 are also not obvious over Sullivan in view of Cavallaro '191, Cavallaro '678 and Harris et al., further in view of Shama, Schenk and Boehm.

The Examiner's cited references neither teach nor suggest the golf ball of claims 7 and 19 to 30.

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IX. CONCLUSION

In view of the above, Appellant respectfully submits that claims 1 to 30 are non-obvious and patentable over the cited references. Accordingly, it is respectfully requested that the Examiner's rejection of claims 1 to 30 be reversed.

Respectfully submitted,

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APPENDIX A

The claims standing on appeal are:

1. A low spin golf ball comprising:

a core including a core component and a spherical mantle encompassing said core component, said mantle comprising (i) a polymeric material, and (ii) a reinforcing material dispersed throughout said polymeric material, said core having a Riehle compression of at least about 75; and

a polymeric outer cover disposed about said core, said polymeric cover comprising a material selected from the group consisting of a high acid ionomer, a low acid ionomer, an ionomer blend, a non-ionomeric elastomer, a thermoset material, and combinations thereof, said polymeric cover having a Shore D hardness of at least about 65.

2. The golf ball of claim 1 wherein said polymeric material of said mantle is selected from the group consisting of epoxy-based materials, thermoset materials, nylon-based materials, styrene materials, thermoplastic materials, and combinations thereof.

3. The golf ball of claim 2 wherein said thermoset material is selected from the group consisting of a polyimide thermoset, a silicone thermoset, a vinyl ester thermoset, a polyester thermoset, a melamine thermoset, and combinations thereof.

4. The golf ball of claim 2 wherein said nylon-based material is selected from the group consisting of nylon 6, nylon 6/10, nylon 6/6, nylon 11, and combinations thereof.

5. The golf ball of claim 2 wherein said styrene material is selected from the group consisting of acrylonitrile-butadiene styrene, polystyrene, styrene-acrylonitrile, styrene-maleic anhydride, and combinations thereof.

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6. The golf ball of claim 2 wherein said thermoplastic material is selected from the group consisting of acetal copolymer, polycarbonate, liquid crystal polymer, polyethylene, polypropylene, polybutylene terephthalate, polyethylene terephthalate, polyphenylene, polyaryl, polyether, and combinations thereof.

7. The golf ball of claim 1 wherein said reinforcing material is selected from the group consisting of silicon carbide, glass, carbon, boron carbide, aramid materials, cotton, flax, jute, hemp, silk, and combinations thereof.

8. The golf ball of claim 1 wherein said mantle has a thickness ranging from about 0.001 inch to about 0.100 inch.

9. The golf ball of claim 8 wherein said mantle has a thickness ranging from about 0.010 inch to about 0.030 inch.

10. The golf ball of claim 1 wherein said cover comprises at least one high acid ionomer resin comprising a copolymer of greater than 16% by weight of an alpha, beta-unsaturated carboxylic acid, and an alpha olefin of which about 10 to about 90% of the carboxyl groups of the copolymer are neutralized with a metal cation.

11. The golf ball of claim 10, wherein said cover is comprised of at least one high acid ionomer resin comprising a copolymer of about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid, and an alpha olefin of which about 10 to about 90% of the carboxyl groups of the copolymer are neutralized with a metal cation.

12. The golf ball of claim 11, wherein said cover is comprised of at least one high acid ionomer resin comprising from about 18.5% to about 21.5% by weight of an alpha, beta-unsaturated carboxylic acid, and an alpha olefin of which about

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10 to about 90% of the carboxyl groups of the copolymer are neutralized with a metal cation.

13. The golf ball of claim 1, wherein the cover has a thickness greater than .0675 inches.

14. The golf ball of claim 13, wherein the cover has a thickness greater than .0675 inches to 0.130.

15. The golf ball of claim 1, wherein the golf ball has a diameter of about 1.680 to 1.800 inches.

16. The golf ball of claim 15, wherein the golf ball has a diameter of about 1.700 - 1.800 inches.

17. The golf ball of claim 16, wherein the golf ball has a diameter of about 1.710 - 1.730 inches.

18. The golf ball claim 17, wherein the golf ball has a diameter of about 1.717 - 1.720 inches.

19. A golf ball comprising:

a core including a core component and a vitreous mantle enclosing said core component, said core having a Riehle compression of from about 75 to about 115; and a polymeric outer cover disposed about said mantle, said cover having a Shore D hardness of at least about 65.

20. The golf ball of claim 19 wherein said vitreous mantle comprises a ceramic selected from the group consisting of silica, soda lime, lead silicate, borosilicate, aluminoborosilicate, aluminosilicate, and combinations thereof.

21. The golf ball of claim 19 wherein said vitreous mantle comprises a reinforcing material dispersed within said mantle.

22. The golf ball of claim 21 wherein said reinforcing material is selected from the group consisting of silicon carbide, glass, carbon, boron carbide, aramid materials, cotton, flax, jute, hemp, silk, and combinations thereof.

23. The golf ball of claim 19 wherein said polymeric outer cover comprises a high acid ionomer of greater than about 16 weight percent acid.

24. The golf ball of claim 19, wherein said core has a Riehle compression of 80 to 90, and a diameter of about 1.540 to about 1.545 inches.

25. The golf ball of claim 19, wherein said golf ball has a diameter of about 1.70 to about 1.80 inches.

26. The golf ball of claim 25, wherein said golf ball has a diameter of about 1.710 to about 1.730 inches.

27. The golf ball of claim 26, wherein said golf ball has a diameter of about 1.717 to about 1.720 inches.

28. A low spin golf ball comprising:
a generally spherical core having an interior core component, and
a mantle layer disposed about said core component, said mantle layer including at least
one metal, said core exhibiting a Riehle compression of from about 75 to about 115; and
a polymeric outer cover disposed about said core, said cover
exhibiting a Shore D hardness of at least about 65.

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29. The golf ball of claim 28 wherein said metal in said mantle is selected from the group consisting of steel, titanium, chromium, nickel, and alloy thereof.

30. The golf ball of claim 28 wherein said cover has a thickness between about 0.0675 inches to about 0.130 inches.